User's Guide

Virtual Vision™ *Sport*

Preface

The Virtual Vision Sport is designed for your viewing pleasure. By following the safety instructions on the next page and using common sense, you can enjoy adapting the Virtual Vision Sport to your everyday life-style.

The instructions found in your User's Guide are written to ensure your safety and to protect the equipment. Review the *Important Safety Instructions* section on page 3. If you do not assemble, use, and maintain the Virtual Vision Sport according to the guidelines found in the User's Guide, you could cause serious personal injury or void the manufacturer's warranty.

Owner's Record
The product's serial number is located on the box and the registration card. Write the serial number in the space provided below. If you have questions regarding the product, use the serial number whenever you call your Virtual Vision dealer or customer service representative.

Serial number: _____

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U.S. Patent 5162828. Other U.S. and foreign patents pending.
Specifications subject to change without notice.

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P/N 010-00572-01

Important Safety Instructions

Warning

To reduce the risk of fire or electric shock, do not expose the Virtual Vision Sport to rain or moisture.

Read, follow, and save instructions.
Be sure to read and follow all operating and use instructions before operating the Virtual Vision Sport. Save the safety and operating instructions for future reference.

Heed warnings.
Pay attention and adhere to any warnings found on the Virtual Vision Sport labels and within this User's Guide.

Prevent electrical and fire hazards.
Keep the Virtual Vision Sport dry. Do not immerse the equipment in liquids. Do not expose the equipment to rain. Do not use this video product near water—for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool or lake.

Only use attachments recommended by Virtual Vision.
Do not use accessory attachments that are not recommended by the manufacturer—such attachments might cause hazards.

Disconnect the power source before cleaning.
Remove the battery, or remove and unplug the battery eliminator, from the belt pack before cleaning the Virtual Vision Sport. Avoid spraying or pouring liquids on the equipment. Do not use liquid or aerosol cleaners. Use a damp, clean cloth to wipe the exterior casing on the belt pack. Refer to the section titled, *Cleaning Considerations* for important information about cleaning the belt pack and eyeware.

Know your power source.
Only operate the Virtual Vision Sport from the type of power source indicated on the device or as specified in the User's Guide. If you are not sure of the type of power source supplied to your home, consult your appliance dealer or local power company. For operation from battery power, refer to the instructions in the User's Guide.

Do not operate cars or other equipment.
Do not drive a car, truck, tractor, lawn mower, motorcycle, or other motor vehicle while using the Virtual Vision Sport. Do not use a bicycle, skateboard, or other non-motorized vehicle while wearing the Virtual Vision Sport. Federal and state law may prohibit such activity. Your ability to see and hear is impaired, which creates dangerous conditions and may cause serious injury to you and to others. To avoid injury, do not wear the Virtual Vision Sport while using appliances and equipment that require you to pay attention to your tasks and surroundings.

Avoid activities where you could fall down or break the equipment.
Do not use stairs or perform other activities where you could fall down while wearing the Virtual Vision Sport. You could injure yourself and damage the equipment. Do not play contact sports. Any impact to the Virtual Vision Sport could break the equipment and hurt your eyes or other parts of your body.

Pay attention to your surroundings.
Be aware of potential hazards, especially if you are walking or moving around, while wearing the Virtual Vision Sport. Keep the volume at a low setting so that you can hear and remain aware of your surroundings.

Avoid eyestrain.
Keep the brightness level on the Virtual Vision Sport at a comfortable level. Discontinue use if your eyes become fatigued or strained.

Protect your hearing.
Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound which could be harmful to your hearing. Guard against this by setting the volume at a safe level before your hearing adapts. Do not use the Virtual Vision Sport with the volume turned up for extended periods of time. If your ears hurt or you hear a ringing sound, discontinue use immediately. High volumes or use of the earphones when your ears hurt can damage your hearing and result in permanent hearing loss.

Protect your eyes.
The right and left temple pieces of your Virtual Vision Sport eyeware are equipped with tension springs for a comfortable fit. However, when removing the eyeware, the temple pieces may spring forward causing injury to your eyes or face. To avoid injury to your eyes, firmly hold the left and right temple pieces away from your face when putting on and taking off your eyeware.

Position the antenna correctly.
Wear the belt pack against your side or back so that the antenna does not stick out or up where it could hurt you if you fell. Be careful of other people around you so that the antenna does not poke or hurt them. The antenna receives signals extended up or down.

Mind the AC adapter cord.
If you use the Virtual Vision Sport with the AC adapter, be careful not to trip over the cord.

Refer servicing to authorized personnel.
Do not open the casing surrounding your Virtual Vision Sport as there are no user-serviceable parts and you will void the manufacturer's warranty. Do not put any foreign objects in the DC IN 7.5 V (external power input) jack as it can damage the equipment. If any liquids or solid objects fall on the unit, disconnect the power supply and have the unit checked by authorized personnel before operating it further.

Information Regarding Use in the U.S.A.

Federal Communications Commission, part 15.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment OFF and ON, you are encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Disconnect the tuner while on board aircraft. The small amount of electromagnetic radiation emitted from the tuner might interfere with on-board systems. Due to electromagnetic interference, you cannot receive a clear television signal on an airplane.

CAUTION: Per the requirement of Part 15, changes or modifications not approved by Virtual Vision, Inc. could void the user's authority to operate the equipment.

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Introduction

Congratulations on purchasing one of the most innovative, portable, and personal entertainment systems available: the Virtual Vision *Sport.*

The Virtual Vision™ Sport revolutionizes the way in which you view visual images. Put on the Virtual Vision Sport and tune in your own Personal Projection TV.™ Through the Virtual Vision Sport Eyeware™ you'll see two things–the real world in front of you and a television image floating in space, just below your normal field of vision.

The lightweight, compact size of the Virtual Vision Sport makes it a pleasure to take anywhere. The belt pack contains the power source: a small, portable TV tuner which transmits images up to the eyeware. Special color optics project the TV-style images that appear and built-in, high fidelity earphones supply the sound.

You are not tied to one place with the Virtual Vision Sport. You can answer the telephone and the door, or make a sandwich without having to wait for intermission. You can socialize with people instead of having your eyes glued to a conventional screen. The possibilities are enticing. Whether it's watching TV, using your camcorder, or watching the latest laser disk video; Virtual Vision Sport provides a portable image as big as big screen TV.

Tips on Using this Manual

Read and follow the instructions found in this User's Guide. These instructions are written to ensure your safety, to protect the equipment, and to assist you in the assembly and operation of the Virtual Vision Sport. Safety guidelines are written to inform you of the risks and precautions (legal and personal) that you need to take responsibility for. If you do not assemble and use the Virtual Vision Sport according to the guidelines found in this manual, you could cause personal injury or void the manufacturer's warranty.

Conventions used in this manual are as follows:

"NOTE:" Contains information that applies to the preceding text.

"IMPORTANT:" Contains information to which you should pay special attention.

"CAUTION:" Presents information or indicates steps necessary to prevent harm to yourself or damage to the equipment.

"WARNING:" Provides information indicating a potentially hazardous situation, which, if not avoided, could result in serious personal injury.

Determining Eye Dominance

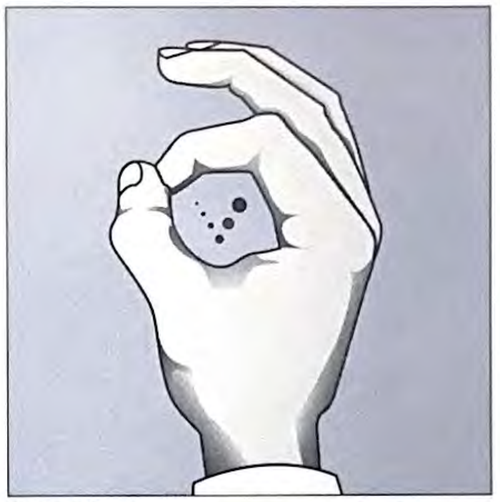

Diagram 1

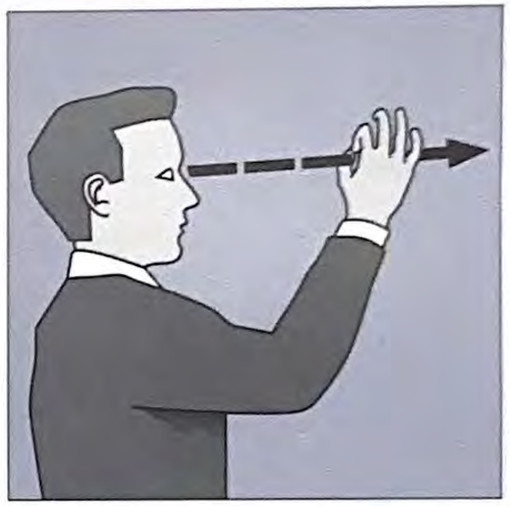

Diagram 2

Before purchasing the Virtual Vision Sport, you should have determined whether you are right-eye or left-eye dominant.

Your dominant eye focuses first, while your other eye provides depth perception. It is your dominant eye which sends "signals" to both sides of your brain, and therefore your brain gives priority to that eye. The Sport places the image in front of your dominant eye, fooling your brain into believing it's in front of both eyes and floating some distance ahead of you.

Whether you have right or left eye dominance plays an important role in the version of Virtual Vision Sport Eyeware you purchase from your dealer.

Even if you have a hunch about which eye is dominant, confirm it by taking the following test:

1. Extend and straighten your arm out as far as you can.
2. Bring your index finger and thumb together to form a circle. See Diagram 1.
3. **With both eyes open,** visually center a small, distant object (like a light switch or door knob) within the center of the circle. See Diagram 2.
4. Without moving your head or arm, close one eye at a time. The eye that keeps the object centered in the circle of your fingers is your dominant eye.

If you plan to have friends or family use your Virtual Vision Sport, ask them to take this simple test. You may need to order different eyeware to accommodate eye dominance that is opposite from your own. For assistance, call your local dealer.

Quick Start

If you are already familiar with consumer electronic equipment, this Quick Start section can help you to quickly assemble and use the Virtual Vision Sport. If you need more instruction refer to the detailed instructions within this guide.

Diagram 3

The Virtual Vision Sport standard package is equipped with everything you'll need to begin watching television-the beltpack, Diagram 3, and eyeware, Diagram 4.

Prior to assembling the Virtual Vision Sport, charge the battery. To place the battery on the beltpack, see Diagram 5. If you wish to try out the Virtual Vision Sport before the battery is charged, you can use the battery eliminator. See *Using Household Current*, page 15.

IMPORTANT: Do not force the connections on any of the parts. If properly handled, all assembled parts should slide together easily.

Diagram 4

Diagram 5

The Virtual Vision eyeware is shipped fully assembled, however, you may want to change the eyeshade prior to using the eyeware.

Evaluate the light source where you plan to use the Virtual Vision Sport. Use the darker eyeshade in situations that pose constant glare. Use the lighter-colored eyeshade indoors or where there is low lighting or contrast. Refer to *Optics and Eyeshades*, page 27.

Power up

Connect the eyeware cable to the belt pack.

Use the ON/OFF switch on the belt pack to turn the Virtual Vision Sport ON. Turn the eyeware over and check the LCD screen to be sure that you're receiving an image.

Put on

Try the eyeware on. You may be able to receive a better image by adjusting the nose piece (for prescription glasses you may need to remove the nosepiece altogether). Refer to *Nose Piece*, page 28.

Be sure the power switch is ON and insert the belt pack into the carrying case. Lift the antenna from between the tuner and battery before enclosing the belt pack in the case.

Place the carrying case in a comfortable position, either on your side or back, so that the antenna will not interfere with your movements.

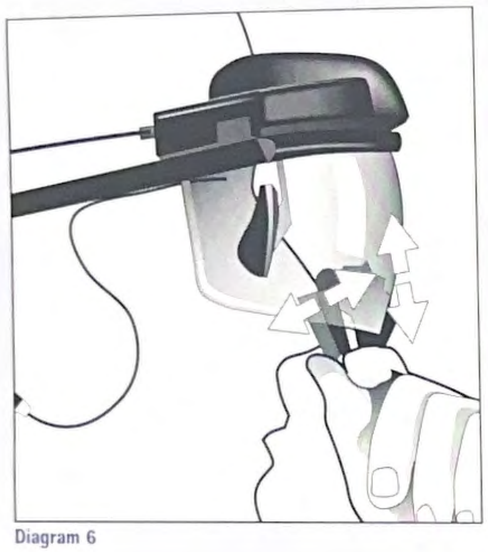

Diagram 6

Tune in

With the battery charged and the assembly of the Virtual Vision Sport complete, you're ready to watch the big screen.

Consider the following adjustments for optimal audio and video quality:

Lens Adjustments

Use the lever mounted on the reflective lens to adjust the focus of the TV image. Refer to Diagram 6.

Earphone Placement

Keep the volume low while you place the earphones in your ears. If you are not sure how to remove the earphone from its holder on the ear frame, refer to *Earphones*, page 30.

Antenna Adjustments

As with all portable TVs, for good quality TV reception, you need to be in an environment that is free from interferences. The terrain and the environment surrounding you are determining factors on your ability to access good TV signals. For more information about TV signal interference, refer to *Troubleshooting the Virtual Vision Sport*, page 44.

Other Video Sources

To use your Virtual Vision Sport with your camcorder, VCR, cable TV or other video source, see *Using other Video Sources*, page 37.

If any parts are missing, check with your dealer or call, 1-800-758-7060 to locate the dealer nearest you. Refer to *Unpacking the Product*, page 12, for more information.

Getting Started

Unpacking the Product

The Virtual Vision Sport standard package is equipped with everything you'll need to begin watching television. Virtual Vision carefully inspects the product prior to shipping, ensuring that all parts are in good operating condition.

Diagram 7

Carefully open your Virtual Vision Sport package and familiarize yourself with its contents. Check the contents against the following list. If any parts are missing, contact your dealer. Be sure to keep your sales receipt in a safe place as proof-of-purchase might be required.

The Virtual Vision Sport standard package contains the following items:

Belt Pack
Tuner and interface module. Diagram 7 shows the battery attached to the belt pack.

Eyeware
Right or left eye dominant glasses, removable earphones, interchangeable nose pieces, interchangeable reflective lens, and eyeware cable. See Diagram 8.

Outdoor Eyeshades

Head Strap

Soft-Sided Carrying Case
See diagram 9.

Battery recharger/ AC power adapter (Battery eliminator)
Recharger–accepts 1100 m Amp-hour standard camcorder style batteries.
AC Adapter–connects to power source, 110v 60Hz.

Registration Card

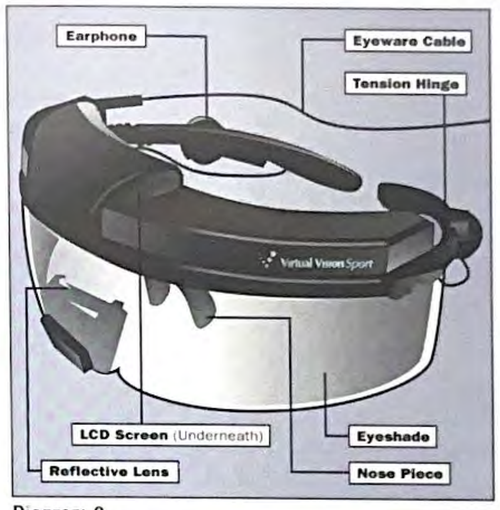

Diagram 8

Diagram 9

Accessory cable
4.5 foot (1.5 meter) video/audio cable for connecting the belt pack to camcorder, VCR, or other video source.

Antenna adapter
Accepts antenna and coaxial cable. Allows use of an external antenna in place of the attached antenna. Virtual Vision Sport limits cable TV reception to VHF and UHF channels (up to channel 69).

Battery
Standard Nicad rechargeable battery. When first unpacking the equipment, you will need to charge the battery for at least 2 hours. (See instructions on page 14.)

Registration Card
Fill out and mail the enclosed registration card now. To find the serial numbers, look at the Virtual Vision Sport labels found on the belt pack and eyeware. The registration card entitles you to new product information as well as new upgrades and enhancements.

To try out the Virtual Vision Sport before charging the battery, follow the instructions in section, *Using Household Current*, page 15.

Battery Charging

Battery Charging

Your AC power charger operates in one of two modes–CHARGE and REFRESH. Normal charging will charge your battery to full power from whatever charged state it is in. This process takes the least amount of time and is the most common form of charging your battery.

To charge the battery pack, take the following steps:

1. Place the battery into the AC power recharger (Diagram 10) so that the two metal contacts on the underside of the battery line up with the contact terminals. Align the locking ribs, push down, and slide the battery into position.
2. Plug the recharger into a power outlet. Charging is automatic. The green "Charge" light on the AC power recharger remains lit while the battery is being recharged.

CAUTION: The AC power recharger converts standard 110v/120v electrical current. Make sure that the power source you are connecting to supplies the proper voltage.

3. When the light no longer appears, charging is complete. When fully charged, the supplied battery should power the system for at least 3 hours of constant use.
4. Remove the battery from the AC power recharger. To learn how to connect the battery to the interface module, refer to the steps in *Belt Pack Assembly*, page 18.
5. Disconnect the AC power recharger from the power outlet.

Diagram 10

Rechargeable batteries lose capacity if they are not periodically and completely discharged. The refresh feature of the recharger automatically discharges the power from the battery pack before recharging it. Use the refresh feature after every 20 charges.

Allow 5 hours when you plan to refresh the battery.

IMPORTANT: Only press the REFRESH button if you wish to perform a full deep cycle charge. In some cases, the REFRESH function may be labeled START, however, the function is the same.

To refresh the battery pack, take the following steps:

1. Place the battery into the AC power recharger (Diagram 10) and plug the recharger into a power outlet.
2. Press the REFRESH button. The yellow "Refresh" light on the AC power recharger remains lit while the battery is being refreshed. The green "Charge" light appears and remains lit while the battery is being recharged.

NOTE: A charge level indicator flashes during the discharging and charging modes (E = Empty, H = Half, F = Full).

3. When the "Refresh" and "Charge" lights no longer appear, charging is complete. Remove the battery from the AC power recharger. To learn how to connect the battery to the interface module, refer to the steps in *Belt Pack Assembly*, page 18.
4. Disconnect the AC power recharger from the power outlet.

All rechargeable batteries have limited life spans. If the battery no longer takes a charge, refer to *Battery Use and Disposal* on page 42 to learn more about using the battery, obtaining a new battery, and disposing of the old one.

NOTE: If you have been using the Virtual Vision Sport for several hours and the TV image suddenly disappears, the battery is low and needs recharging.

Using Household Current

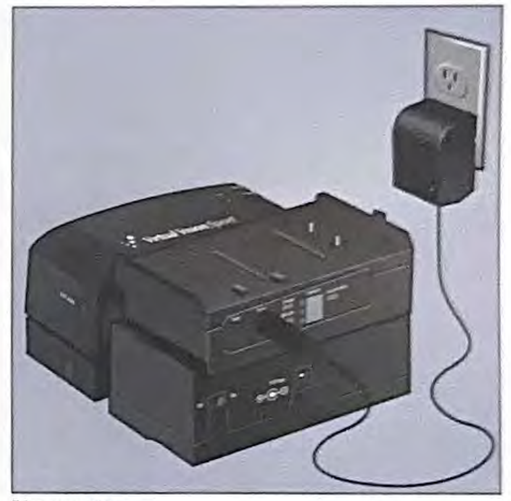

Diagram 11

Using Household Current

Household current can be used as an alternative power source, although your mobility will be limited.

To connect to household current, take the following steps:

1. Turn OFF the power switch on the belt pack.
2. Replace the battery on the belt pack with the battery eliminator as shown in Diagram 11.
3. Connect the AC adapter to a standard, grounded power outlet.
4. Turn ON the power switch on the belt pack.

Belt Pack

2

User's Guide

Belt Pack Assembly

The information in this section provides steps on how to assemble and disassemble your Virtual Vision Sport belt pack, adjust the controls, use the carrying case, and adjust the antenna.

Before operating the unit, be sure to read through this section and follow the instructions.

Belt Pack Assembly

The Virtual Vision Sport belt pack is comprised of three distinct parts: the tuner, the battery, and the interface module. The battery and tuner plug onto the interface module and the whole unit slides into the carrying case.

Assembly Tips:

Be sure to charge the battery. If you wish to use the Virtual Vision Sport immediately, you can use the belt pack without the battery by attaching the battery eliminator as explained in the previous section, *Using Household Current*.

To place the battery onto the interface module, take the following steps:

1. Position the interface module as shown in Diagram 12.

Diagram 12

NOTE: Labels on the unit indicate where to attach the tuner and battery.

2. Pick up the battery pack and locate the two metal contacts on the underside of the battery.
3. Place the battery onto the interface module so that the contact terminals line up. Align the locking ribs, push down, and slide the battery toward the tuner. (See Diagram 12.)

With the belt pack assembled, familiarize yourself with the controls, place the belt pack in the carrying case, and adjust the antenna.

Removing the Tuner and Battery

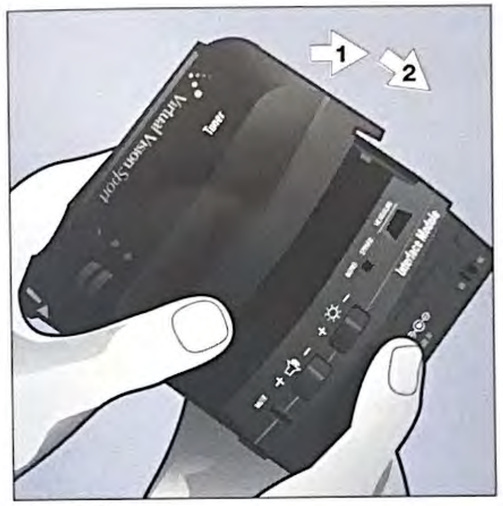

Diagram 13

If you plan to use accessory equipment such as a camcorder, remove the tuner from the belt pack to save power.

To remove the tuner, take the following steps:

1. Remove the backing plate.
2. Fold the beltpack at the hinge.
3. Hold the section of the interface module as shown in Diagram 13.
4. Remove the tuner by sliding the tuner back and lifting the tuner out.

NOTE: To replace the tuner, hold the interface module as shown in Diagram 13. Align the locking ribs between the tuner and interface module. Then, press down and slide the tuner into position.

To save the battery charge, remove the battery from the belt back when you are not using the Virtual Vision Sport.

To remove the battery, take the following steps:

1. Hold the section of the interface module as shown previously in Diagram 13.
2. Push down on the battery pack and slide the battery in the opposite direction.

Adjusting the Controls

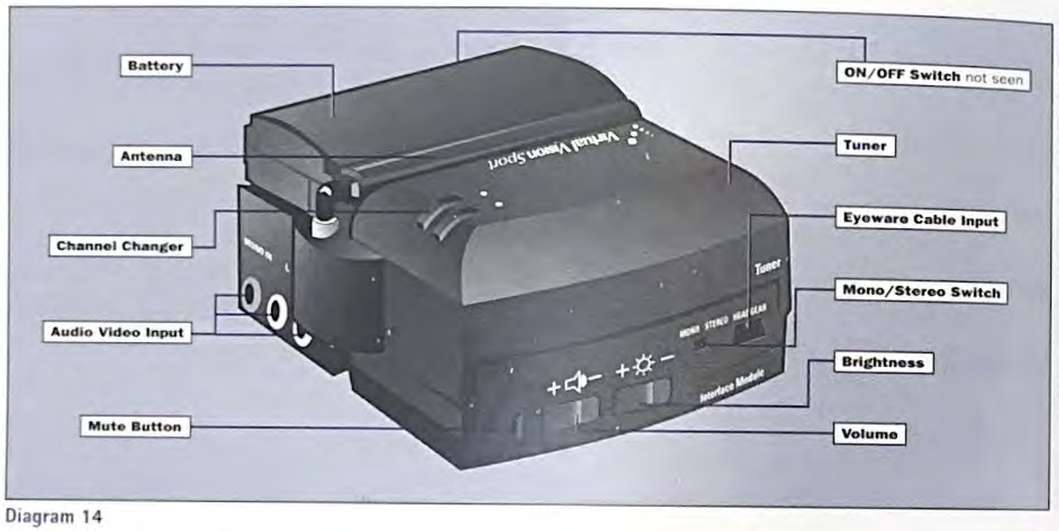

Diagram 14

The ON/OFF switch, channel controls, audio volume, mute button, and brightness are located on the interface module as shown in Diagram 14.

Interface Module ON/OFF Switch

The ON/OFF switch on the interface module provides power to your Virtual Vision Sport. The power switch should be in the OFF position to help retain the battery charge anytime you are not using the Virtual Vision Sport.

Channels

When you turn ON your Virtual Vision Sport, the tuner starts at a low VHF frequency and begins seeking from that point for a clear signal. The tuner stops seeking when it detects a signal. If the projected TV image is not clear, you may need to adjust the antenna or manually change the channel using the + and - buttons on the belt pack.

The VHF and UHF channels appear as vertical bars superimposed over your TV image. VHF channels appear as a slow moving bar which is positioned proportionally across the image with channel 2 being on the far left of the screen and channel 13 on the far right. UHF channels appear as a faster moving bar with channel 14 on the far left and channel 69 on the far right of the screen. The vertical bar remains for about 3 seconds after the channel has been selected.

NOTE: If you hold either channel button down, you will skip channels. Once you reach channel 69, the system returns to channel 2 and continues seeking from there. The opposite occurs when you seek channels in the other direction.

Brightness

The brightness is preset at a medium range and might need adjustment. When you turn OFF the Virtual Vision Sport, the brightness resets to the original setting.

NOTE: Reducing the brightness helps preserve the battery charge and is less fatiguing to your eyes when you are using the Virtual Vision Sport in a darkened room.

Volume

The volume is preset to a medium/low setting and resets to that setting every time the interface module is turned OFF. Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound which could be harmful to your hearing. Guard against this by setting the volume at a safe level before your hearing adapts.

NOTE: To establish a safe volume level, slowly increase the sound until you can hear it comfortably and clearly without distortion.

Mono/Stereo Switch

If you are connecting other devices to the Virtual Vision Sport using only one audio cable and wish to hear the audio in both ears, the cable must be plugged into the mono/left jack and the switch on the interface module must be in the Mono position.

To hear stereo sound when you connect devices with left and right audio input cables to the belt pack, be sure to change the Mono/Stereo switch to Stereo. The tuner receives only mono sound, but will work in either the mono or stereo position.

Mute Button

The mute button eliminates the audio. No sound is heard through the earphones when the mute button is depressed. To disengage the mute button either press it again or press the "+" or "-" volume button.

Auxiliary Jacks

You can use other video/audio devices with the Virtual Vision Sport by connecting the standard video/audio cable provided between the device and the three video/audio jacks on the Virtual Vision Sport. If you are connecting a device that has only one audio cable and wish to hear sound in both ears, the cable must be plugged into the mono/left jack and the switch on the interface module must be in the Mono position.

NOTE: To save power when using the auxiliary jacks, remove the tuner from the interface module.

External Antenna

Diagram 15

The Virtual Vision Sport comes equipped with an external antenna jack and adapter plug that lets you connect to cable TV or an external antenna. To learn how to receive cable TV or external antenna signals, refer to the section titled, *Using Other Video Sources*, page 37.

External Power Jack

An external power jack is located on the belt pack and accepts 7.5 volts DC (see diagram 15). The plug must have a diameter of 4mm outside and 1.67mm hollow center. The plug's polarity is center - (minus) and outside + (plus).

CAUTION: To avoid damaging the equipment or voiding the manufacturer's warranty, check with your dealer before attaching any power supply to the external power jack.

Carrying Case

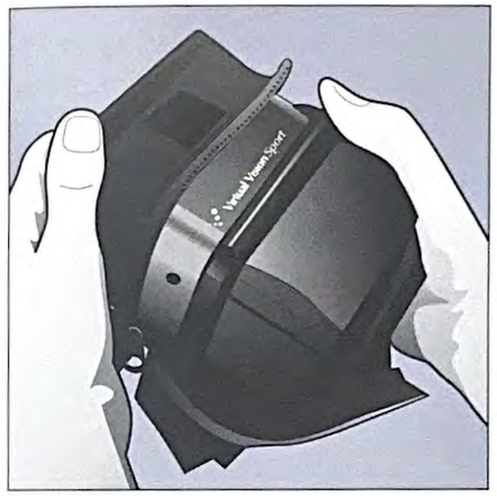

Diagram 16

Diagram 17

The Virtual Vision carrying case has been designed with your convenience in mind. The carrying case protects the Virtual Vision Sport from the elements, yet provides easy access to the controls and antenna. Your freedom of movement is assured while you watch your favorite entertainment.

To insert the belt pack into the carrying case, take the following steps:

1. Unzip the carrying case and place the Virtual Vision Sport into the case as shown in Diagram 16.

   NOTE: To manipulate the controls on the interface module, you need to place the belt pack in the correct position inside the carrying case.

2. Gently, pull the antenna out prior to closing the zipper on the case.

3. Place the carrying case in a comfortable position, either on your belt, over your shoulder, or around your waist as shown in Diagram 17.

When you are not using the eyeware, secure it to the belt pack by wrapping the parking strap around it as shown by Diagram 17. The parking strap is held in place by a snap. Though snug, this might not hold the eyeware securely if the eyeware is subject to excessive movement.

Carrying Case Tips:

- Connect the eyeware cable to the belt pack before placing the belt pack in the carrying case.
- Be sure that the belt pack's power switch is ON.
- Position the antenna as shown in Diagram 18 prior to closing the case.

Adjusting the Antenna

Diagram 18

The antenna determines the quality of your reception. Like any product that receives modulated frequencies, movement is going to disrupt your reception and distort the TV image.

CAUTION: Be aware of people and objects around you. Wear the belt pack against your side or back so that the antenna does not protrude out where it could hurt you or others if you fell.

To adjust the antenna, take the following steps:

1. Gently lift the antenna from between the tuner and battery as shown in Diagram 18. Extend it as far as necessary to receive a clear picture. Do not pull it beyond its extension capabilities.

CAUTION: When returning the antenna to its (non-use) position, you may need to rotate the antenna to align the hinge before folding the antenna down. Do not force the antenna into position. If you force the antenna into position, it will break.

2. Move the antenna on its hinge to provide a clear picture. Be considerate of people and aware of objects around you. The antenna receives signals pointed up or down.

Connecting the Eyeware Cable

Once you have assembled the belt pack you can connect the eyeware cable, put on the eyeware, make any necessary adjustments, and begin watching your favorite entertainment.

Connect the eyeware cable to the belt pack by placing the eyeware cable into its receptacle on the belt pack as shown in Diagram 19.

Diagram 19

IMPORTANT: The connector is designed to attach to the belt pack receptacle in one direction only. Do not force the connection. Forcing the connection will damage the equipment and void the manufacturer's warranty. Do not use the cable for anything other than a connection between the Virtual Vision Sport eyeware and interface module.

The Virtual Vision Sport Eyeware is shipped as one piece. To accommodate indoor/outdoor use, additional eyeshades accompany your eyeware.

Diagram 19

Vision and Adjustment Tips:
Prior to your purchase, you will have determined whether you are left-eye or right-eye dominant. If you plan to let other people use your Virtual Vision Sport, you will need to determine their eye preference. Refer to *Determining Eye Dominance* on page 7, to learn how to take a simple test for eye dominance. To order different eyeware, contact the dealer from whom you bought the Virtual Vision Sport.

Turn the belt pack ON. Once the power is ON, turn the eyeware over and check the LCD screen underneath the eyeware to see that the screen is lit or an image is present.

Using the Eyeware Strap
The Virtual Vision Sport comes equipped with a strap that you can attach to the temple piece. Use the strap to ensure a snug fit while wearing the Virtual Vision Sport.

Optics and Eyeshades

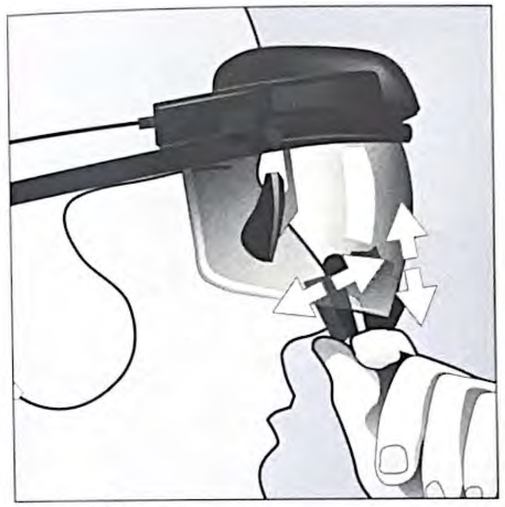
Diagram 20

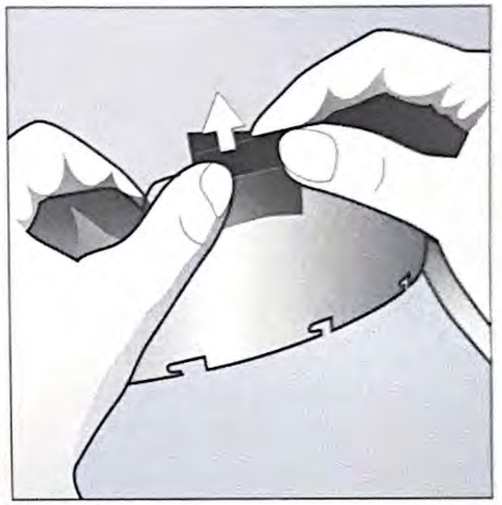
Diagram 21

Adjusting the Lens
The reflective lens enhances the resolution of the virtual image and optimizes your viewing ability by letting you vary your focal distance and adjust the image in your lower field of vision. The lens is mounted on a track which lets you slide the lens up and down, shifting the focal length. This adjustment moves the virtual image closer or farther away from you. The lens also tilts back and forth so you can adjust the image up or down in your lower field of vision.

To adjust the lens, take the following steps:

1. To adjust the position of the virtual image within your lower field of vision, hold on the lens lever and tilt it back and forth until you are satisfied with the focus and position of the projected image.
2. To shift the focal length, move the lens up or down by holding onto the lens lever and gently sliding the lens up to move the image closer to you or down the track to move the image further away until the virtual image appears at an optimal distance.

Changing the Eyeshades
The eyeshades supplied with your Virtual Vision Sport are interchangeable. Determine where you will be using the Virtual Vision Sport, inside or outside. Use the lighter colored eyeshade indoors or in situations where there is low light. Use the darker eyeshade on sunny days or in situations that pose a constant glare.

IMPORTANT: The eyeshades are held in place with locking ribs similar to those found on the tuner and battery. It is important to note which way the eyeshade slides out.

To change the eyeshades, take the following steps:

1. Carefully remove the reflective lens

Nose Piece

Diagram 22

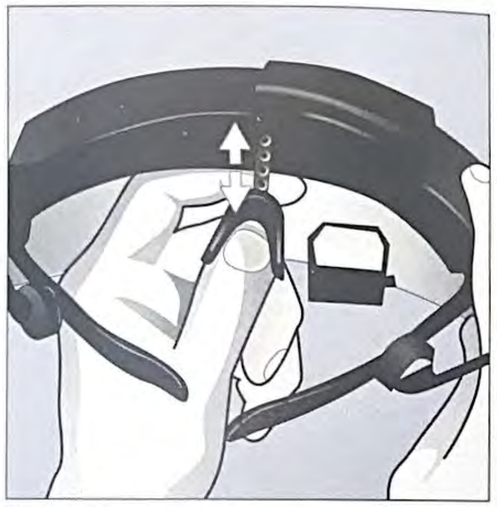

Diagram 23

from the eyeshade by pulling it out of its holder. (See Diagram 21).

2. Hold the eyeware in one hand and grasp the eyeshade with your other hand.

IMPORTANT: Do not force the eyeshade out of the eyeware. If properly handled, the eyeshade should slide easily out of its holder. Trying to pry the eyeshade away from the eyeware will damage the equipment and void the manufacturer's warranty.

3. Remove the eyeshade by gently pushing in toward the eyeware and then, sliding it in the direction shown in Diagram 22.
4. Replace the new eyeshade by aligning the locking ribs and then pushing up gently while sliding it in the opposite direction.
5. Slide the reflective lens onto the new eyeshade.

Adjusting or Removing the Nose Piece

The nose piece on the Virtual Vision Sport is adjustable. It can also be removed altogether to accommodate your prescription eye glasses.

Adjusting the nose piece up and down as in Diagram 23 affects the focus of the projected image. Through "trial and error," raise and lower the nose piece until you achieve the clearest image.

Use With Prescription Glasses

Because the reflective lens can be adjusted for different focal lengths, you may not need to wear your prescription glasses to see the virtual image. Try on the Virtual Vision Sport without your glasses and adjust the lens so the image appears focused in front of you. If the image still does not appear focused, you may need to wear your prescription glasses with the Virtual Vision Sport.

Tension Hinges

Diagram 24

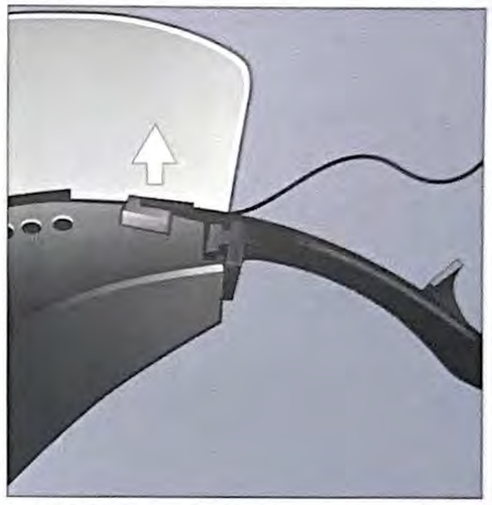

Diagram 25

To fit the Virtual Vision Sport over glasses you have two options:

- For smaller glasses, those that do not extend above your eyebrows, move the nose piece up so that the eyeware is comfortable on the frame of your glasses.
- For larger glasses, you may want to remove the nose piece (See Diagram 24) and rest the Virtual Vision Sport eyeware on top of your frames.

If you have bi[illegible]ls and the projected image falls be[illegible]n the split, switch to your "distanc[illegible]wing" eye glasses while using the Vir[illegible]sion Sport.

NOTE: To ensu[illegible]ug fit, use the eyeware strap to hold th[illegible]are in place.

Replacing the [illegible]ple Pieces

The temple pie[illegible]ome as a pair, one each for the right an[illegible]ft ear. Replace the temple pieces one at a time.

To replace the temple pieces, take the following steps:

1. Gently, pull the earphone out of its holder.

CAUTION: To avoid damage to the earphone cables, tension hinges, and earphones, remove the earphone from its holder before removing the temple piece.

2. Support the tension hinge with your thumb. Place your other hand near the temple piece bracket and gently pull the temple piece up and away from the tension hinge. See Diagram 25. Do not turn or twist the temple piece or tension hinge because breakage can occur.
3. Align the temple piece bracket with the tension hinge mount. Slide the temple piece bracket onto the tension hinge mount. The temple piece should line up with the base "T" design on the temple

Earphones

hinge mount.
4. Perform the same procedure with the opposite temple piece and return the earphones into their holders and return the eyeware to its upright position.

The right and left temple pieces of your Virtual Vision Sport eyeware are equipped with tension springs for a comfortable fit. However, when removing the eyeware, the temple pieces may spring forward causing injury to your eyes or face.

WARNING: To avoid injury to your eyes, firmly hold the left and right temple pieces away from your face when putting on and taking off your eyeware.

Using the Earphones

The earphones are connected to the eyeware by cables and stored in holders on the temple pieces.

To use the earphones, take the following steps:

WARNING: Before placing the earphone in your ear, make sure that the audio is at a low volume. See *Volume* on page 21 to correctly set volume levels.

1. Put the eyeware on and remove each earphone by grasping the handles and gently pulling the earphone off its holder and away from your head.
2. Place the earphone in your ear as shown in Diagram 26.
3. Use the handle to turn the earphone until you feel comfortable with its placement.

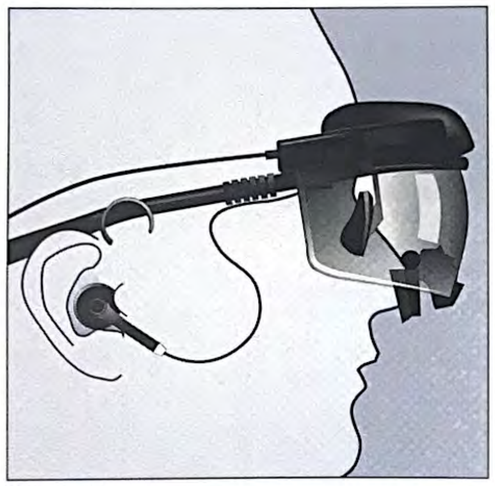

Diagram 26

When you are not using the Virtual Vision Sport, be sure to place each earphone into its storage holder on the temple piece.

CAUTION: Remove the earphones from your ears prior to taking off the eyeware. The earphone cables can detach from the eyeware if you remove the eyeware before removing the earphones from your ears.

Replacing the Earphone Cables

If the earphone cables detach from the eyeware, you will need to re-attach the[m] into the proper position. To do this alig[n] the plug with the eyeware rece[p]tacle an[d] gently push the plug into posi[tion].

Understanding Virtual Imaging

4

Understanding Virtual Imaging

To understand virtual imaging, you first need to apply the power of the Virtual Vision Sport. It is not just another big screen TV.

The Sport is:

- portable – you're no longer tied to one place – you can take a big screen TV with you.
- flexible – you can hook it up to about any video source, including your camcorder.
- unobtrusive – you can watch your favorite entertainment and not bother anyone else in the room.
- ergonomic – you don't have to prop yourself up or face any particular direction to watch TV.
- guilt free – you can do laundry, perform other chores, or watch the kids and still enjoy your favorite shows.
- private – no one else knows what you are watching so they can't expose the plot or comment on your taste in programs.
- a social TV – you can carry on a conversation and look people in the eye while watching your favorite show.
- the first immersion video experience – you can move about or just move your head and the image and stereo sound move with you. The only thing better than an electronic home theater is one that is portable.

Creating a Wide Screen Image from a One Inch Screen

Virtual Vision Sport technology involves reflecting an image to your dominant eye resulting in a virtual image which floats in space. Within the eyeware is a miniature video display and a sophisticated, reflective optical system. Part of the optical system is a small, specially engineered, reflective lens, which is mounted slightly below your normal field of vision. Since your brain gives priority to whatever image is viewed by your dominant eye, the image seems to appear in both of your eyes. The lens bounces the video image from the video display so that it appears to be focused a comfortable distance (6 feet and beyond) in front of you. (See Diagrams 28 and 29.)

NOTE: If you are unsure whether your left or right eye is dominant, take the test in the section titled, *Determining Eye Dominance*, page 7.

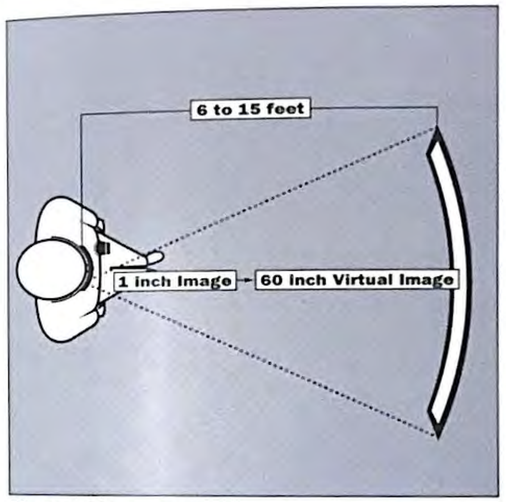

Diagram 28

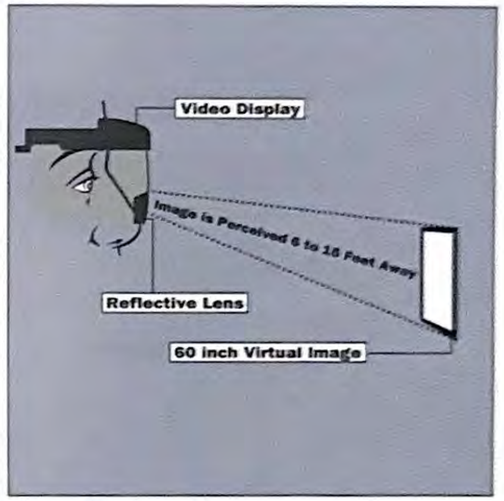

Diagram 29

Focal Length

When you wear the Virtual Vision Sport, the further away you focus on an object the larger the virtual image appears. The image expands and contracts in size depending on your focal length which is related to the distance between your eyes and whatever object your eyes focus on. Since the image being projected lies just below your normal plane or field of vision, your eyes are free to focus on either a close-up or distant object.

Compare the size of the virtual image by focusing first on a distant object, such as a tree 100 yards (91 meters) away. Glance down to view the image and see that it appears large compared to the tree. Then refocus your eyes on your watch. Glance down again. The virtual image is much smaller when you focus on an object close-up.

Since the optimum distance at which your eye focuses on the projected image begins around 6 feet (1.8 meters) in front of you and can continue to the horizon, looking at an object very close to your eyes and then returning to the image being projected from the eyeware causes your eye to constantly re-focus. Constant re-focusing can cause eye strain. To eliminate eye strain when you wear the Virtual Vision Sport, it is best to focus on an object that is beyond 6 feet (1.8 meters) in front of you.

Getting the Most Out of Your Virtual Vision *Sport* Eyeware

5

Owner's Guide

Watching TV

After charging the battery and assembling your Virtual Vision Sport, you're ready to watch the big screen without being tied to one place. Just tune in your favorite event or show and enjoy.

To watch TV, follow these instructions:

WARNING: Many states prohibit the use of audio/video devices such as the Virtual Vision Sport while operating vehicles. For other safety precautions, be sure to read *Important Safety Instructions, on* page 3.

Battery
Fully charge and connect the battery to the interface module.

NOTE: No TV image appears if the battery is low and needs recharging.

ON/OFF switch
Be sure the power switch on the interface module is in the ON position.
After positioning the ON switch, check the LCD screen on the eyeware to be sure that you're receiving an image.

Eyeware adjustments
Make any necessary adjustments to the eyeware such as changing the eyeshades, raising or lowering the nose piece for maximum comfort.

Lens adjustments
Use the lever mounted on the reflective lens to adjust the TV image so you can see the top and bottom of the picture being projected into your lower field of vision.

Eyeware Connection
Connect the cable from the eyeware to the belt pack.

Earphone Placement
Keep the volume low while you place the earphones in your ears.

Antenna Adjustments
For good quality TV reception, you need to be in an environment that is free from interferences. The terrain and the environment surrounding you are the determining factors on your ability to access good TV signals.

Using Other Video Sources

Using the Antenna Adapter
The Virtual Vision Sport is equipped with an external antenna jack and antenna adapter that lets you connect to cable TV or an external antenna wire.

To connect to cable TV or an external antenna, take the following steps:

1. Locate the cable or antenna wire coming from the wall outlet. Fasten it to the antenna adapter by screwing the cable connector into the adapter's receptacle.

   NOTE: You may need to buy appropriate hardware from your local electronics store. For example, you might buy a splitter and additional coaxial cable so you can use the same cable outlet to wire both your home TV and your Virtual Vision Sport.

2. Remove the belt pack from the carrying case.
3. Turn OFF the Virtual Vision Sport using the ON/OFF switch on the belt pack.
4. Plug the antenna adapter into the tuner on the belt pack.
5. Turn ON the belt pack and tune into your favorite s[illegible].

Note: The Virtual V[illegible] Sport limits cable TV reception to VHF ar[illegible] channels (up to channel 69).

Using the Video and Audio Jacks
The Virtual Vision Sport comes equipped with one video and two audio jacks that accept standard video/audio input cable. Use the jacks to connect to other video and audio sources.

WARNING: Make sure that any audio or video source that you attach to is properly grounded. Proper grounding reduces the risk of electrical shock. Improper connections can damage the equipment and void the manufacturer's warranty.

If you are connecting a device that has only one audio cable and wish to hear sound in both ears, the jack must be plugged into the mono/left jack and the switch on the interface module must be in the Mono position.

IMPORTANT: When using the jacks remove the tuner to conserve battery charge.

Watching Videos Using Your VCR
Virtual Vision supplies a standard 4.5 foot (1.5 meter) video/audio cable that allows you to connect to a VCR.
To use a VCR, connect the cable to the audio/video jacks on the Virtual Vision Sport belt pack and the audio/video out ports on the VCR. If possible, switch the VCR to the output mode.

NOTE: Be sure that the interface module power switch is ON.

Once you supply power to the VCR, sit back, and enjoy the big screen.

Filming With Your Camcorder

Diagram 29

Use the Virtual Vision Sport to enhance your filming abilities. By connecting your camcorder to the Virtual Vision Sport, you can use the eyeware as your viewfinder. The Virtual Vision Sport is compatible with most camcorders. Simply connect the Virtual Vision Sport to your camcorder by using the 3-jack accessory cable provided with the unit.

To connect the Virtual Vision Sport to your camcorder, take the following steps:

1. To save power, remove the tuner from your belt pack.
2. Attach the audio/video accessory cable that comes with your Virtual Vision Sport to the accessory cable ports on your camcorder.

   IMPORTANT: Be sure to attach the jacks into the appropriate ports (video, left and right audio). If your camcorder has only two jacks (one audio and one video), be sure to place the audio jack into the mono/left port on the belt pack. Note that you might need to switch the camcorder port to output mode.

3. Connect the jacks on the other end of the cable to the belt pack (Diagram 29.)
4. Make sure that the interface module's power switch is ON.

You are now ready to begin filming using the Virtual Vision Sport as your viewfinder. Follow the instructions found in your camcorder's owner's manual for the best filming techniques.

Maintenance

Maintaining Your Virtual Vision Sport

Your Virtual Vision Sport comes equipped with the latest technology in visual imagery. With proper handling and periodic maintenance and cleaning, your Virtual Vision Sport will provide many hours of entertainment for years to come.

The information in this section provides maintenance tips and instructions on how to clean, use and dispose of the battery and service your Virtual Vision Sport.

Maintenance Tips

- Handle the Virtual Vision Sport with care. Do not drop the equipment. Dropping the Virtual Vision Sport can damage the equipment and void the manufacturer's warranty.
- Keep the equipment away from extremes in temperature. Virtual Vision Sport operates best between 32° to 104° Fahrenheit (0° to 40° Celsius). Battery life is shorter and its efficiency is decreased in cold temperatures.
- Be aware that wearing or moving the equipment directly from a cold to a warm location can cause moisture to condense inside the eyeware and belt pack. If this occurs, the equipment might not operate. Before moving from a cold to a warm place, turn OFF the equipment. Before turning the power switch back ON, leave the Virtual Vision Sport in a warm place for several hours so the moisture has time to evaporate.
- Do not open the casing surrounding the battery, interface module, tuner, or eyeware. No user-serviceable parts exist except those discussed in this manual. Attempting to open the casings will void the manufacturer's warranty.

Cleaning Considerations

Use a soft, damp cloth to clean the exterior plastic casing on the Virtual Vision Sport. Do not use abrasive cleaners on any portion of the Virtual Vision Sport. Do not pour or spray liquids onto the Virtual Vision Sport and do not immerse the equipment in water.

IMPORTANT: The reflective lens is extremely sensitive to dust particles and oils. Do not touch the surface of the lens with your fingertips. Oils on your hands can damage the coating on the lens. Hold the lens using the lever as shown in Diagram 20 in the section titled, *Adjusting the Lens*.

To clean the reflective lens, take the following steps:

NOTE: You will need to obtain lens cleaning tissues similar to those used for cleaning a camera lens.

1. Hold the lens lever to move the lens so its surface is accessible.
2. Lightly wipe the lens surface with the camera lens tissue.
3. Use the lens lever to return the lens to its proper position. Be sure that you do not touch the surface of the lens. The oil on your fingertips can mar its surface.

The eyeshades are made of a special material that can be cleaned using a soft, clean cloth, mild soap or detergent, and lukewarm water. Rinse the soap off with clean lukewarm water.

IMPORTANT: To avoid getting water on the Virtual Vision Sport, be sure to remove the eyeshades before cleaning them.

To prevent water spots, dry the eyeshades thoroughly using a chamois or moist, clean cellulose sponge.

IMPORTANT: Do not scrub, use brushes, or abrasive cleaners on the eyeshades; their coating is UV-resistant, not mar-resistant.

If you need more information about suggested cleaning products, refer to the telephone number found in, *Obtaining Service and Getting Replacement Parts, page 45.*

Battery Use and Disposal

The battery on the Virtual Vision Sport is a standard NiCad battery. The battery recharger accepts up to 2400m Amp-hour standard camcorder style batteries.

Prepare for Extended Use

Take along higher capacity or additional charged batteries if you plan to use your Virtual Vision Sport continuously for more than three hours. The battery charge will be used up more quickly in colder weather.

NOTE: To help conserve battery usage, turn the belt pack's power switch OFF and remove the battery when you are not using the Virtual Vision Sport.

Battery Maintenance Tips

The new battery that comes with the Virtual Vision Sport is not charged. You need to charge it before you can use it. Refer to *Charging the Battery* on page 14 for instructions.

- Make sure that you use up the battery before recharging. Repeat charging before using up the battery may lower the battery's capacity to take a charge.
- Refresh the battery after a long storage. If the battery is fully charged and then not used for a long period of time (several months), it becomes discharged. Charge it again. It will recover to near its original capacity after several charging and discharging cycles.
- The battery pack can be fully charged and discharged about 500 times under normal operating conditions. Recommended temperatures during charging range from 50°F to 85°F (10°C to 30°C). Low temperatures require a longer charging time.
- Keep the terminals (metal parts on the back of the battery) clean. If the terminals are not kept clean, battery life will be shortened. To clean the terminals and improve contact, wipe the + and - terminals using a soft, clean cloth.
- The battery pack heats up during use due to the energy being generated by the chemical changes inside the pack. This is a normal function and there is no cause for concern.

Battery Disposal

Rechargeable batteries have toxic chemicals that remain long after the battery no longer takes a charge. If you improperly dispose of the battery, toxic chemicals can leak into the environment. In certain states, NiCad batteries might be considered hazardous waste material. Contact your local hazardous waste collector to learn how to properly dispose of your NiCad batteries.

Troubleshooting the Virtual Vision *Sport*

7

Troubleshooting

Check below to see if your problem is listed. If the following information does not solve a particular problem, call your authorized Virtual Vision dealer. For telephone numbers, refer to *Obtaining Service and Getting Replacement Parts* on the next page.

Poor Reception
Many building materials will cause interference. TV signals are also obstructed or reflected by hills and buildings.
Do not use the equipment around strong electromagnetic radiation sources. Electric motors, radios, microwave receiving stations, and high voltage power lines can interfere with the receiving and transmission signals. Using an external antenna may increase reception.

Disconnect the tuner while on board aircraft. The small amount of electromagnetic radiation emitted from the tuner might interfere with on-board systems. You cannot receive a clear television signal on an airplane, due to the altitude at which you are traveling and the interference from radio and other signals on board the aircraft. You can use accessory equipment such as a portable VCR, while traveling in an airplane, but be sure to remove the tuner from your belt pack. This helps to conserve battery charge and lessen the likelihood of signal interference problems.

No Projected Image
Check to see if there is an image on the LCD display.

If not check:
- power switch is ON
- battery is charged
- eyeware cable connected
- tuner and battery correctly attached to interface module

If so check:
- reflective lens properly adjusted

Fuzzy Image
Adjust antenna, the nose piece, and/or change channels. The recommended placement of the image should be just slightly below your line of sight. You may have to move the nose piece up or down to obtain a clear image.

If you have been improperly fitted with the wrong eyeware for your eye dominance, you'll tend to squint your non-viewing eye and it will be difficult to concentrate on the image. Take the eye dominance test on page 7 and check with your dealer to be sure you have the proper eyeware.

Eyestrain
If you are not accustomed to wearing eye glasses, it may take time to adjust to using the eyeware. Focusing on any moving image for several hours can cause eye strain. To help minimize eye strain, consider the following:

To relieve eyestrain, try the following:

- Shift your field of vision away from the TV image and focus on something else for a few minutes.

- Do not concentrate on short range viewing. Ideal viewing is in front of you, at a distance beyond 6 feet. To focus the image at a farther distance, pull the lens lever down.

- Make sure that you have been properly fitted with the right or left eyeware. Take the simple test on page 7, *Determining Eye Dominance*. Headaches can occur due to eye strain caused by using your non-dominant eye. Check with your dealer to be sure you have the best fit.

- Adjust the brightness or change the eyeshade. Watching an image that is too bright while in a darkened room or using the dark eyeshade indoors may cause eye fatigue or headaches.

Projected Image Seems Small
Make sure that you have been properly fitted with the correct eyeware. If your eye dominance has been incorrectly determined, it will be difficult to visualize the projected image at its full size (a large diagonal screen while focusing at, or beyond, 6 feet in front of you).

Obtaining Service and Getting Replacement Parts
Do not attempt to service the Virtual Vision Sport yourself. There are no user-serviceable parts.

If you need replacement parts or further information about product operation or service, contact your authorized Virtual Vision dealer. To locate the dealer nearest you, call: 1-800-758-7060.

Virtual Vision Sport Specifications

Eyeware:

Dimensions (HWD):	3.5 x 7 x 6.75 inches (9 x 18 x 17 centimeters)
Weight:	5 ounces/140 grams
Operating Temp.:	32° to 104° F (0° to 40° C)
Humidity:	20 to 80% relative humidity
Display:	96,600 pixel, active matrix color display
Viewing Image:	Approximately 30 to 60 inches diagonally
Stnd. Focal Length:	Comfortable focus–beyond 6 feet
Eye Preference:	Two versions available for right- and left-eye dominance
Eyeshades:	Standard 90% and 60% light blocking. Interchangeable UV blocking, hard coated, impact and scratch resistance.
Accommodations:	Interchangeable tension hinge set. Nose piece adjusts vertically or may be removed to accommodate eye glasses. Reflecting lens adjusts vertically. Strap secures eyeware to head if necessary.
Video format:	NTSC
Brightness:	Adjustable on belt pack

Audio:

Earphones:	In ear type. Secured on eyeware temple pieces when not in use.
Frequency response:	60-20,000 Hertz
Stereo/Mono:	Stereo from audio inputs. Mono from standard tuner.

Belt Pack:

Volume:	Push button + and -
Stereo/Mono:	Slider switch
Brightness:	Push button + and -
Tuner (U.S.):	VHF 2 – 13, UHF 14 – 69 Push button tuner automatically seeks next channel (up or down). On-screen channel indication by vertical color bars.
Antenna:	Extends to 12 inches (30 centimeters)
External Antenna Jack:	Mini phone jack for 75 Ohm antennas
Accessory Cables:	4.5 foot (1.5 meter) video/audio RCA cable
Cable TV connections:	Video and stereo audio-in cable through either jacks or external antenna
Battery:	Up to 2400mAh standard NiCad rechargeable
Battery Life:	3 – 4 hours depending on brightness
Recharger:	Fast recharger with battery eliminator
Power-in jack:	Accepts 7.5V DC. Plug size 4mm, center negative
Power consumption:	9.7 watts
Dimensions (HWD):	4.5 x 4.25 x 2.375 inches 12 x 11 x 6 centimeters
Weight:	16 ounces (approx. 500 grams) including 1100mAh battery

Power Pack Adapter

Use only the AC adapter supplied with the Virtual Vision Sport. The AC Adapter is a UL/CSA approved, Class 2 power source. It supplies a maximum of 9.0 volts DC and 0.9 Amps.

Virtual Vision™

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